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10/562,066	03/23/2007	Erika Jensen-Jarolim	37488.00800US	9617

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EXAMINER

ROONEY, NORA MAUREEN

ART UNIT	PAPER NUMBER
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1644

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10/06/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/562,066	Applicant(s) JENSEN-JAROLIM ET AL.	
	Examiner NORA M. ROONEY	Art Unit 1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 18 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>01/06/2005 and 08/31/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-19 are pending.
2. Applicant's election without traverse of Group I, claims 1-17 in the reply filed on 08/23/2010 is acknowledged.
3. Claims 18-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Groups, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 08/23/2010.
4. Applicant's IDS documents filed on 01/06/2006 and 08/31/2010 are acknowledged. The items that were crossed out are not publications with publication dates, thought they have been considered.
5. Claims 1-17 are currently under consideration as they read on microspheres for allergy therapy containing antigens and/or DNA of antigens, wherein the microspheres have a binding constant KB of at least $1 \times 10^4 \text{ M}^{-1}$ toward the specific carbohydrate residue of intestinal and/or nasal epithelial cells.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1-17 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for: PLGA microspheres containing birch pollen extract wherein the microspheres have lectins on their surface; does not reasonably provide enablement for

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microspheres **for allergy therapy** containing **antigens and/or DNA of antigens**-wherein the microspheres have a binding constant KB of at least $1 \times 10^4 \text{ M}^{-1}$ toward the specific carbohydrate residue of intestinal and/or nasal epithelial cells of claim 1; **wherein the antigens and/or DNA of antigens are allergens and/or DNA of allergens** of claim 16; **wherein the antigens are mimotopes of the allergen Phl p 5 and/or of the allergen Bet v 1** of claim 17 and as applied to claims 2-15. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and or use the invention commensurate in scope with the claims.

The specification disclosure does not enable one skilled in the art to practice the invention without an undue amount of experimentation.

Factors to be considered in determining whether undue experimentation is required to practice the claimed invention are summarized *In re Wands* (858 F2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)). The factors most relevant to this rejection are the scope of the claim, the amount of direction or guidance provided, the lack of sufficient working examples, the unpredictability in the art and the amount of experimentation required to enable one of skill in the art to practice the claimed invention.

The specification discloses PLGA microspheres containing birch pollen extract wherein the microspheres have lectins on their surface

The specification has not adequately disclosed microspheres comprising any antigen or

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DNA of antigen. The terms "antigen," read on any molecules that generate an immune, therapeutic or allergic response, including synthetic drugs and non-peptide compounds. The specification has not adequately disclosed the use of the microspheres comprising the genus of all antigens, all allergens, all drugs and all DNA encoding antigens to for allergy therapy.

The method of treating and preventing allergens must be specific to the allergen. Therefore, the specification has not adequately disclosed any antigen, any allergen or any DNA to be used to treat allergy or induce mucosal immunity, as encompassed by the claimed invention. It would require undue experimentation by one of ordinary skill in the art to practice the claimed invention. Given the lack of sufficient guidance and predictability in determining which modifications would lead to a decrease in IgE binding, it would require an undue amount of experimentation for one of skill in the art to arrive at the breadth of the claimed invention. Blumenthal et al. teaches that correlations between structure and IgE binding (or the lack of IgE binding) cannot be predicted on an a priori structural basis (PTO-892, Reference U, see entire document and page 39 of third full paragraph The specification does not provide support for a method of treating, preventing or inducing mucosal immunity comprising administering any allergen or any antigen or any DNA. The claims, as recited, include the use of any peptide from any polypeptide allergen or any derivative thereof. Kinnunen et al. (PTO-892-892; Reference V, abstract, discussion) teaches that the use of allergen peptide derivatives or "altered peptide ligands" of the lipocalin allergen. The reference shows that the APL induce differential T cells stimulation (In particular, Table I, page 6, paragraph spanning left and right columns). The discussion cautions those who are looking to use APL in immunotherapy for allergy because

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some T cells populations, such as pathogenic memory cells, that are induced by certain APL would exacerbate allergic disease (In particular, page 7, left column, second paragraph). One of ordinary skill in the art would be required to determine how alterations to each position of the peptide affect binding to MHC and how that in turn effects T cell activation. The T cell activation induced by the peptide in vivo would also need to promote hypoallergenic/ tolerogenic effects, which is also highly unpredictable. The unpredictability in the art highlights that an undue amount of experimentation is necessary to practice the claimed invention.

The specification provides no in vivo data to support the claimed subject matter. In view of the absence of a specific and detailed description in Applicant's specification of how to effectively use the microspheres for treating allergies, absence of working examples providing evidence which is reasonably predictive that the claimed microspheres are effective for in vivo use to treat a specific allergic disease, and the lack of predictability in the art at the time the invention was made, an undue amount of experimentation would be required to practice the claimed invention. Given that the art shows that it is highly unpredictable what will be a therapy for any particular allergic disease, it would require an undue amount of experimentation for one of ordinary skill in the art to practice the claimed invention commensurate in the scope with the claims.

Substantiating evidence may be in the form of animal tests, which constitute recognized screening procedures with clear relevance to efficacy in humans. See *Ex parte Krepelka*, 231 USPQ 746 (Board of Patent Appeals and Interferences 1986) and cases cited therein. *Ex parte Maas*, 9 USPQ2d 1746.

Reasonable correlation must exist between the scope of the claims and scope of the enablement set forth. In view on the quantity of experimentation necessary the limited working examples, the nature of the invention, the state of the prior art, the unpredictability of the art and the breadth of the claims, it would take undue trials and errors to practice the claimed invention.

8. Claims 1-17 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant is in possession of PLGA microspheres containing birch pollen extract wherein the microspheres have lectins on their surface

Applicant is not in possession of any microspheres **for allergy therapy** containing **antigens and/or DNA of antigens**-wherein the microspheres have a binding constant K_B of at least $1 \times 10^4 M^{-1}$ toward the specific carbohydrate residue of intestinal and/or nasal epithelial cells of claim 1; **wherein the antigens and/or DNA of antigens are allergens and/or DNA of allergens** of claim 16; **wherein the antigens are mimotopes of the allergen Phl p 5 and/or of the allergen Bet v 1** of claim 17 and as applied to claims 2-15.

Applicant has disclosed PLGA microspheres containing birch pollen extract wherein the microspheres have lectins on their surface; therefore, the skilled artisan cannot envision all the contemplated microsphere possibilities recited in the instant claims. Consequently, conception

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cannot be achieved until a representative description of the structural and functional properties of the claimed invention has occurred, regardless of the complexity or simplicity of the method.

Adequate written description requires more than a mere statement that it is part of the invention.

See *Fiers v. Revel*, 25 USPQ2d 1601, 1606 (CAFC1993). The Guidelines for the Examination of Patent Application Under the 35 U.S.C.112, ¶1 "Written Description" Requirement make clear that the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species disclosure of relevant, identifying characteristics, i.e., structure or other physical and or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the genus (Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 2001, see especially page 1106 3rd column).

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the written description inquiry, whatever is now claimed." (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116.). Consequently, Applicant was not in possession of the instant claimed invention. See University of California v. Eli Lilly and Co. 43 USPQ2d 1398.

Applicant is directed to the final Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1 "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 2001.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-7 and 9-13 rejected under 35 U.S.C. 102(b) as being anticipated by (IDS filed on 01/06/2006) as evidenced by the specification on pages 13-16.

5.

Clark et al. teaches PLG (PLGA) microspheres containing antigens characterized in that the microspheres have lectins, such as WGA, on their surface that increase the adhesion to mucosal cells of the intestinal and nasal epithelium (In particular, Table 1, page 208, pages 212-217, whole document); wherein the microspheres have substances on their surface which increase the adhesion to mucosal cells; wherein the specific carbohydrate residue is alpha-L-fucose; wherein the substances on the microsphere surface are non-toxic, edible lectins; characterized in that the microspheres have a diameter of .4 micrometers of claim 9

The specification teaches on pages 13-16 that PLGA microspheres with WGA lectin on the surface are encompassed by the instant claim recitations. Therefore, without evidence to the contrary, the recitation of "a binding constant K_B of at least $1 \times 10^4 \text{ M}^{-1}$ toward the specific carbohydrate residue of intestinal and/or nasal epithelial cells" of claim 1; "wherein the microspheres have an avidity K_B of at least $1 \times 10^{10} \text{ M}^{-1}$ toward the specific carbohydrate residue of intestinal and/or nasal epithelial cells" of claim 2; "wherein the skeleton of the microspheres

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consists of polymers" of claim 10; "wherein the skeleton of the microspheres consists of polymers with functional groups" of claim 11; "wherein the skeleton of the microspheres consists of biodegradable polymers or copolymers" of claim 12; "wherein the skeleton of the microspheres consists of polylactic acid, polyglycolic acid or of poly(lactic-co-glycolic acid) copolymer" of claim 13 are inherent in the reference PLG microspheres with WGA lectin on the surface.

It is noted that the instant claims are drawn to a product, not to a method. Therefore, the intended use of "for allergy therapy" of claim 1 does not carry patentable weight per se. The claims read on the active or essential ingredients of the composition and a composition is a composition irrespective of its intended use. It is noted that the specification does not provide any limiting definition of microspheres for allergy therapy. Therefore, the reference PLG (PLGA) microspheres containing antigens characterized in that the microspheres have lectins, such as WGA, on their surface that increase the adhesion to mucosal cells of the intestinal and nasal epithelium are encompassed. Giving the terms their broadest reasonable definition, PLG (PLGA) microspheres containing antigens characterized in that the microspheres have lectins, such as WGA, on their surface that increase the adhesion to mucosal cells of the intestinal and nasal epithelium are not incompatible with use for allergy therapy.

The reference teachings anticipate the claimed invention.

11. No claim is allowed.

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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nora M. Rooney whose telephone number is (571) 272-9937. The examiner can normally be reached Monday through Friday from 8:30 am to 5:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

September 30, 2010

Nora M. Rooney

Patent Examiner

Technology Center 1600

/Nora M Rooney/

Primary Examiner, Art Unit 1644

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